

***The Impostor Phenomenon in First-Generation Undergraduate Students***

**An Honors Thesis (HONR 499)**

**by**

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## Abstract

The impostor phenomenon is an internal experience which occurs in high-achieving individuals who believe that their success has been achieved due to chance rather than their own abilities and intelligence (Clance, 1985a). Previous research has investigated this phenomenon based on a variety of factors such as minority status, age, gender, and psychological health (McClain et al., 2016; Sonnak & Towell, 2001; Thompson, Davis, & Davidson, 1998). Few studies, however, have investigated the impostor phenomenon in undergraduate first-generation students. Therefore, the purpose of the current study was to compare the impostor feelings of first-generation students to those of non-first-generation students. The first hypothesis was that first-generation undergraduate students would have significantly higher impostor phenomenon scores compared to non-first-generation students. In addition, it was hypothesized that both socioeconomic status and racial/ethnic minority status would mediate this relationship. The final hypothesis was that there would be an inverse relationship between semesters in college and impostor feelings in both groups. In order to explore these hypotheses, participants completed an online survey including the Clance Impostor Phenomenon Scale and demographic questions (Clance, 1985b). The results showed that non-first-generation students had greater impostor feelings compared to first-generation students. Also, neither socioeconomic status nor racial/ethnic minority status mediated that relationship. Finally, there was no relationship between semesters in college and impostor scores. Exploratory analyses also yielded significant results. Implications for college students and future research directions are discussed.

## Acknowledgements

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## Process Analysis Statement

The process of writing this thesis was both challenging and rewarding. This project began as a desire to investigate the impostor phenomenon, but in the beginning, I still needed to find my niche. I needed to identify a gap in the impostor phenomenon literature that warranted additional research. I began by researching the impostor phenomenon based on gender, race, psychological factors, age, career area, and a host of other factors. Finally, I found that there had been very little research on the impostor phenomenon based on parental educational attainment, or first-generation status. I was only able to find one study that specifically broke down the participants based on parental educational attainment. This led me to begin investigating the experiences of first-generation students and the challenges they face as they begin college for the first time. As I dug into my research, I began developing hypotheses and methods that could be used to test these hypotheses. I developed a survey to distribute to Ball State undergraduates using the Clance Impostor Phenomenon Scale, which is a statistically valid measure that assesses an individual's impostor feelings. I gained permission from the author of the scale to use it for my study and sent out the survey to Ball State students. After attaining over 100 responses to my survey, I analyzed my data and developed conclusions based on those results. I also had the opportunity to share my research with the Ball State community at the Ball State Symposium.

I think that the process of completing this thesis project has given me a lot of confidence in my researching abilities. This was my first independent research project and paper, so it was a daunting project. Before beginning this project, I was not sure whether I would be able to come up with my own research question and investigate that question all on my own. I was also unsure about whether I would actually enjoy conducting my own research. Through the process of writing this thesis, however, I learned that I am a research-minded person. I also discovered

that the process of conducting your own research is extremely rewarding. I enjoyed being able to present my thesis poster at the Ball State Symposium and discuss my project with members of the research community at Ball State. I appreciated their feedback and interest in my project, which gave me confidence in my researching skills.

One of the most challenging aspects of this project was the creation of my research question and hypotheses. These aspects of the paper are the foundation of the entire project, so it was important to me that they were strong and grounded in research. It was often time consuming and difficult to find relevant research surrounding the impostor phenomenon because it is a relatively new concept with a limited amount of research. The other challenge in completing this project was data analysis. The data analysis process is complex, and I needed a lot of advice and support from my advisors during this stage of my research process. I also had a major insight during my data analysis process: the data does not always turn out the way you initially expect. After spending a semester researching the impostor phenomenon and first-generation students, I felt confident in my hypotheses. The main results, however, turned out to be the exact opposite of what I hypothesized. I think that this showed me that research studies, especially on human subjects, can be very unpredictable. Even when the results are not what you expect, they still tell an interesting story. Oftentimes insignificant results are considered unimportant, but they still tell you something important about the population you are studying. My biggest takeaway from this project is that you should not be disappointed by results that do not support your hypotheses. No matter what results you find, there is important knowledge to be gained from those results.

This thesis is a culmination of the knowledge I have gained throughout my four years as a psychology major at Ball State. I was able to combine my knowledge of and interest in statistics,

SPSS, research methods, literature reviews, and research on factors impacting academic success into a major project that I am proud to submit as my honors thesis. In addition to being personally important to me, my completed thesis project also has important practical implications. Psychology studies, even simple surveys, can tell us so much about human nature, and this study also has practical applications for colleges and universities. The knowledge that non-first-generation college students have higher impostor scores compared to first-generation students shows that all students, regardless of parental educational attainment, may need assistance adjusting to college. This data could help educate the Ball State administration about the impostor phenomenon and what services they can provide in order to help students cope with their impostor feelings and the pressures of college. Overall, I am glad that my thesis project yielded significant and practical results, and I have thoroughly enjoyed the process of writing this thesis and being able to share it with the Ball State Community.

## The Impostor Phenomenon in First-Generation Undergraduate Students

The impostor phenomenon is an internal experience in successful and high-achieving individuals who feel that their successes have occurred due to chance rather than their own abilities (Clance, 1985a). Clance and Imes (1978) coined the term “impostor phenomenon” based on psychotherapy sessions with hundreds of high-achieving women. Impostors feel that their success cannot be repeated and that their success only occurred due to working hard or being at the right place at the right time (Clance, 1985a). The impostor phenomenon is typically measured by asking participants to rate their perceptions of their own competence, successes, and intelligence on 20 Likert scale questions, with higher endorsements indicating higher levels of impostor feelings (Clance, 1985b). Although early research on the impostor phenomenon indicated that it was mainly experienced by women, current literature has found that it is experienced by men and women at similar rates (Bernard, Dollinger, & Ramaniah, 2002; McClain et al., 2016; Thompson, Davis, & Davidson, 1998). The impostor phenomenon has been found to affect many different populations including undergraduate and graduate students, business owners, artists, nurses, and lawyers (Clance, 1985a). Despite research showing the various populations experiencing the impostor phenomenon, little research has examined it in undergraduate first-generation students. Considering the other negative effects that first-generation students experience such as higher attrition rates (Ishitani, 2006), higher likelihood of discrimination (Terenzini, Springer, Yaeger, Pascarella, & Nora, 1996), and poor confidence in their academic abilities (Hottinger & Rose, 2006), it seems reasonable to consider that the impostor phenomenon would affect first-generation students as well. Therefore, the purpose of the current study is to investigate the experiences of impostor feelings in undergraduate first-generation students.

## **Racial and Ethnic Minorities**

Racial and ethnic minority groups have been the subject of recent impostor phenomenon research. Asian Americans have been found to have higher impostor phenomenon scores compared to both African Americans and Latino Americans (Cokley, McClain, Enciso, & Martinez, 2013). Frequency of discrimination is one variable that has been associated with the impostor phenomenon. A study examining the experiences of African Americans at predominantly white institutions found that African American women who reported high frequencies of discrimination were more likely to have higher impostor phenomenon scores (Bernard, Lige, Willis, Sosoo, & Neblett, 2017). The study found no associations between frequencies of discrimination and impostor phenomenon scores for men. Similarly, minority stress status has also been found to influence impostor feelings. Minority stress status is defined as various stressors that minorities experience such as racism, discrimination, insensitive comments, and questioning whether they belong in college (McClain et al., 2016). McClain et al. (2016) found that minority stress status was related to increased impostor feelings in a sample of African American students.

The impostor phenomenon has also been linked to psychological variables in ethnic minority populations. Among African American students, higher impostor scores predicted both lower self-esteem and higher psychological distress (Peteet, Brown, Lige, & Lanaway, 2015). A similar study investigating the experiences of African American students found that higher impostor feelings were associated with lower mental health (McClain et al., 2016). Impostor scores have also been found to predict levels of psychological distress and psychological well-being in a diverse population of ethnic minorities (Cokley et al., 2013). Low ethnic identity has been found to be a predictor of high impostor feelings among African American and Hispanic



college students (Peteet, Montgomery, & Weekes, 2015). In a similar study, African Americans who reported positive feelings about their membership to the African American minority group experienced lower impostor feelings and higher self-esteem (Lige, Peteet, & Brown, 2016). It is evident from these studies that many race-related factors can be related to increased impostor feelings among racial and ethnic minority students.

### **Psychological Well-Being**

The impostor phenomenon has been linked to multiple psychological variables within college student populations. In general, poorer mental health has been correlated with higher impostor feelings (Sonnak & Towell, 2001). One specific construct that has been associated with the impostor phenomenon is self-esteem. Lower self-esteem has been associated with higher impostor feelings in multiple studies (Schubert & Bowker, 2017; Sonnak & Towell, 2001; Thompson, Davis, & Davidson, 1998). High impostor feelings have also been correlated with higher depression scores (McGregor, Gee, & Posey, 2008) and higher anxiety (Thompson et al., 1998). Research has also indicated that higher impostor scores are related to higher feelings of social anxiety (Chrisman, Pieper, Clance, Holland, & Glickauf-Hughes, 1995).

One study investigated the relation between impostor feelings and the Big Five personality traits: Neuroticism, Extraversion, Openness to Experience, Agreeableness, and Conscientiousness (Bernard et al., 2002). The study found that high impostor feelings are related to both high neuroticism and low conscientiousness, which indicates that these individuals are more disposed to experiencing depression and anxiety. Research has also focused on college students' academic self-concept, which is an indicator of students' confidence in their academic abilities (Cokley et al., 2015). Cokley et al. (2015) found a negative relationship between academic self-concept and impostor feelings in college students.

## **Age-Related Factors**

Relatively few studies have investigated the relationship between age and the impostor phenomenon, and the results in the literature are mixed. For example, research with an adult sample who had been successful in their occupation did not find a correlation between the participants' age and their impostor feelings (Want & Kleitman, 2006). Similarly, a study investigating the impostor feelings of internal medicine residents found no association between the participants' year in the program and their impostor scores (Legassie, Zibrowski & Goldszmidt, 2008). This finding could be due to the fact that residents are constantly facing new experiences and pressures, causing their impostor feelings to remain relatively stable over time. More pertinent to the current study, one study has examined this relationship between age and impostor feelings in undergraduate students. Thompson et al. (1998) investigated the impostor phenomenon in undergraduate psychology students and found a significant negative association between age and impostor feelings. This indicates that as participant age increased, impostor feelings decreased.

Research has also compared the impostor feelings of first to fourth-year graduate students (Harvey, 1981). The results of this study indicated that first-year graduate students were more likely to experience the impostor phenomenon compared to second, third, and fourth year graduate students. Additionally, the study compared the impostor feelings of the first-year graduate students to those of senior honors students, and they found that the first-year graduate students had higher impostor feelings. This comparison was made because senior honors students are likely to be at a similar academic level as the graduate students were before they entered graduate school. The results of this study provide support for the idea that impostor feelings do not decrease as a result of more education and that they could be influenced by

starting a new and unfamiliar position. The small body of research in this area, however, does not yield consistent results, which indicates a need for future research investigating the relationship between age and impostor feelings.

### **First-Generation Students**

First-generation college students may experience many difficulties not experienced by their non-first-generation peers. A study by the United States Department of Education in 2011 found that about one-third of college undergraduates are first-generation students, which indicates that the unique experiences of these students are important to consider (Skomsvold, 2015). First-generation students are more likely to be an ethnic minority, and they are also more likely to experience ethnic, racial, or gender discrimination (Bui, 2002; Terenzini et al., 1996). Additionally, these students are more likely come from a family with a lower socioeconomic status than non-first-generation students (Bui, 2002). Research has also found that these students are more likely to be older, be enrolled in college part-time, and work while attending college (Hottinger & Rose, 2006). Considering these factors, it is perhaps not surprising that research indicates that first-generation students are 8.5 times more likely to drop out of college compared to non-first-generation students (Ishitani, 2006).

First-generation students are also different from their peers academically. Several studies have found that first-generation students have a lower GPA compared to their non-first-generation peers (Hottinger & Rose, 2006; Martinez, Sher, Krull, & Wood, 2009; Warburton, Bugarin, Nunez, & Carroll, 2001). Research has also found that first-generation students have lower critical thinking skills and lower pre-college math and reading skills (Terenzini et al., 1996). There is also evidence that the stigma of being first-generation can cause students to have poor confidence in their academic abilities (Hottinger & Rose, 2006).

The fact that their parents did not attend college can put first-generation students at a disadvantage as they navigate college for the first time. First-generation students report less encouragement from their families to attend college (Terenzini et al., 1996). First-generation students also report feeling less prepared for college and feeling that they knew less about the college social environment (Bui, 2002). Bui (2002) also found that first generation students showed an increased fear of failing college. These students may potentially be less confident in their knowledge of college culture because their parents were unable to prepare them for this new environment (Hottinger & Rose, 2006). This study also found that first-generation students have difficulties with identity development because of the difference between their identities at school and at home. The impostor phenomenon has frequently been observed in individuals whose talents and skills are atypical compared to their family (Clance, 1985a). It also often occurs in those who are beginning a new or unfamiliar role (Clance, 1985a). The dissonance that first-generation students feel in their identities as well as the unfamiliarity with their new environment are factors that could influence the impostor feelings of these individuals.

Relatively few studies have investigated the impostor phenomenon in first-generation college students. College educated adults who had attained a higher education level compared to their family had significantly higher impostor phenomenon scores compared to those who reported a similar education level to their families (Harvey, 1981). In a sample of black and Hispanic undergraduate students, first-generation status was associated with higher impostor feelings (Peteet, Montgomery, & Weekes, 2015). In a separate stepwise regression analysis, the study found that first generation status did not significantly predict impostor feelings when other variables were analyzed. This reveals that there could be additional factors mediating the relationship. A similar study investigating the impostor feelings of British undergraduate

students found no correlation between parent education level and impostor feelings (Sonnak & Towell, 2001). Although the results of this relationship are mixed, it should not be discounted due to the small number of studies that have investigated the impostor phenomenon within this population. The contradictory results in these studies illustrate the need for more research investigating experiences of impostor phenomenon in first-generation students.

### **Current Study**

Prior research investigating the impostor phenomenon in first-generation college students has produced mixed results. Peteet et al. (2015) investigated the impostor feelings of black and Hispanic undergraduate students and found an association between first generation status and higher impostor feelings. This study also illustrated a need for investigation of potential mediators of this relationship. Another body of impostor phenomenon research that has produced inconsistent results is the investigation of whether impostor feelings change throughout individuals' college careers (Harvey, 1981; Legassie et al., 2008; Thompson et al., 1998). Therefore, the current study seeks to investigate the impostor phenomenon in first generation students as well as potential mediators of this relationship, including socioeconomic status and racial/ethnic minority status. Additionally, this study investigated the relationship between impostor feelings and year in school in both first-generation students and non-first-generation students. The present study asked college students to complete a survey regarding their impostor feelings as well as multiple demographic variables.

Based on prior research, three main hypotheses were developed for the current study. The first hypothesis was that first-generation undergraduate students would have significantly higher impostor phenomenon scores compared to non-first-generation students. In addition, it was hypothesized that both socioeconomic status and racial/ethnic minority status would mediate

this relationship. First-generation status would be associated with lower socioeconomic status, which would be associated with increased impostor feelings. Similarly, first-generation status would be associated with racial/ethnic minority status, which would be associated with increased impostor feelings. Limited research has investigated the relationship between impostor feelings and age or year in school. The one study that has been done has shown a negative correlation between impostor feelings and age in undergraduate students (Thompson et al., 1998). Therefore, the third hypothesis was that there would be an inverse relationship between semesters in college and impostor feelings in both groups (e.g. freshman would have higher impostor scores compared to seniors in both first-generation and non-first-generation students). Exploratory analyses were also be conducted to explore additional relationships.

## **Method**

### **Participants**

The participants of this study were 121 Ball State University undergraduate students with a mean age of 20.21 years. Most participants identified as female (82.6%). The majority of participants were white (86%) and about one quarter were first-generation students (25.6%). Participants had been in college an average of 4.67 semesters, with a range from 1 to 14 semesters. The mean GPA of the sample was 3.33. Participants were recruited through an email via the Ball State Communication Center asking them to participate in the study. Participants were also recruited through the Psychological Science Subject Pool (SONA). Participants recruited through SONA received research credit for their participation. No compensation was offered for participants recruited via email.

## Materials

The impostor phenomenon was assessed with the 20-item Clance Impostor Phenomenon Scale, which measures the degree of an individual's impostor feelings (CIPS; Clance, 1985b). The scale asked the participants to rate the degree to which each statement is true of them on a 5-point Likert scale (1 = *not at all true* and 5 = *very true*). Higher scores indicate more frequent and serious impostor feelings. The scale includes items such as "I often worry about not succeeding with a project or examination, even though others around me have considerable confidence that I will do well." The CIPS has high internal consistency reliability, with a Cronbach's alpha of .92 for participants' total scores (French, Ullrich-French, & Follman, 2008). In addition to the CIPS, demographic questions included age, gender, race, socioeconomic status, year in school, GPA, and parental educational attainment. See Appendix A for survey materials.

## Procedure

Participants were contacted via email and asked to participate in the current study. The email included a link to a Qualtrics survey. The survey took approximately 10 minutes to complete, but participants had as much time as they needed. Participants read an informed consent document at the beginning of the survey. For the CIPS, participants read instructions specifying that they should select the first response that enters their mind rather than dwelling on any one statement (Clance, 1985b). The CIPS was completed first, followed by the demographic questions.

## Results

### Preliminary Results

Descriptive analyses for impostor scores, socioeconomic status, and race were computed. Table 1 displays the means and standard deviations of impostor phenomenon scores for the total

sample, first-generation students, and non-first-generation students. Table 2 displays the means and standard deviations for socioeconomic status in the total sample, first-generation students, and non-first-generation students. Table 3 displays percentages of racial/ethnic minority status for the total sample, first-generation students, and non-first-generation students.

### **Hypothesis Testing**

The first hypothesis that was tested was that first-generation students would have higher scores on the Clance IP Scale compared to non-first-generation students. An independent samples t-test was performed to compare the overall imposter scores for first-generation students and non-first-generation students. The t-test was significant,  $t(119) = -2.16, p = .033$ . On average, first-generation students had lower imposter scores ( $M = 59.65$ ) compared to non-first-generation students ( $M = 65.96$ ). These results indicate that non-first-generation students have more intense impostor feelings compared to first-generation students, which is the opposite of what was hypothesized.

The next hypothesis was that socioeconomic status would mediate the relationship between first-generation status and impostor feelings (meaning that first-generation status would be associated with lower socioeconomic status, which would be associated with increased impostor feelings). An independent samples t-test was conducted to compare the socioeconomic status of first-generation students compared to non-first-generation students. The t-test was significant  $t(119) = -4.08, p = .001$ . On average, first-generation students had a lower socioeconomic status ( $M = 5.13$ ) compared to non-first-generation students ( $M = 6.37$ ). Next, a Pearson correlation was conducted to test the relationship between socioeconomic status and impostor scores. There was no significant correlation between the two variables,  $r = -.078, n =$



121,  $p = .394$ . This means that there was no correlation between socioeconomic status and impostor scores.

For the final test of this hypothesis, an analysis of covariance (ANCOVA) was conducted to test whether there was a significant difference between first-generation and non-first-generation students on impostor scores when controlling for socioeconomic status. There was a significant effect of first-generation status on impostor scores after controlling for socioeconomic status,  $F(1, 118) = 7.03, p = .009$ . This indicates that first-generation students have significantly lower impostor scores even when controlling for socioeconomic status.

It was also hypothesized that racial/ethnic minority status would mediate the relationship between first-generation status and impostor feelings. A two-way analysis of variance (ANOVA) was conducted to examine the effect of first-generation status and racial/ethnic minority status on impostor scores. There was no significant interaction between first-generation status and racial/ethnic minority status on impostor scores,  $F(1,117) = .431, p = .513$ . This indicates that first-generation status have significantly lower impostor scores even when controlling for racial/ethnic minority status.

The final hypothesis was that there would be an inverse relationship between semesters in college and impostor feelings in both groups, meaning that freshman would have higher impostor scores compared to seniors in both first-generation and non-first-generation students. A Pearson correlation was conducted to test the relationship between semesters in college and impostor scores. There was no significant relationship between the variables,  $r = .056, n = 121, p = .542$ . This indicates that there was no relationship between impostor scores and semesters in college.

## Exploratory Analyses

An independent samples t-test was performed to compare the overall imposter scores for men compared to women. The t-test was significant,  $t(116) = 2.27, p = .025$ . On average, men had lower imposter scores ( $M = 57.39$ ) compared to women ( $M = 65.40$ ). These results indicate that women have more intense impostor feelings compared to men.

Additionally, a Pearson correlation was conducted to test the relationship between GPA and impostor scores. There was no significant relationship between the variables,  $r = -.16, n = 121, p = .079$ . This indicates that there was no significant relationship between GPA and impostor scores. In order to investigate the GPA of first-generation students compared to non-first-generation students, an independent samples t-test was conducted. The t-test was not significant,  $t(119) = -.89, p = .376$ . These results indicate that there were no differences in GPA in first-generation students compared to non-first-generation students.

A Pearson correlation was conducted to test the relationship between age and impostor scores. There was a significant negative correlation between age and impostor scores,  $r = -.22, n = 121, p = .015$ . This indicates that as participants' age increases, their impostor scores decrease. Two additional Pearson correlations were conducted to investigate the relationship between age and impostor scores in first-generation and non-first-generation students separately. In first-generation students, there was a significant negative correlation between age and impostor scores,  $r = -.38, n = 31, p = .034$ . This indicates that as first-generation students' age increases, their impostor scores decrease. In non-first-generation students, there was no significant correlation between age and impostor scores,  $r = -.001, n = 90, p = .995$ . This indicates that there is no relationship between age and impostor scores in non-first-generation students.

A Pearson correlation was conducted to investigate the relationship between semesters in college and impostor scores in first-generation and non-first-generation students separately. For first-generation students, there was no significant correlation between semesters in college and impostor scores,  $r = -.15$ ,  $n = 31$ ,  $p = .420$ . These results indicate that for first-generation students, there was no relationship between semesters in college and impostor scores. Additionally, a Pearson correlation was conducted to investigate the relationship between semesters in college and impostor scores in non-first-generation students. For non-first-generation students, there was no significant correlation between semesters in college and impostor scores,  $r = .13$ ,  $n = 90$ ,  $p = .238$ . These results indicate that for non-first-generation students, there was no relationship between semesters in college and impostor scores.

### **Discussion**

The purpose of the current study was to investigate the impostor feelings of first-generation and non-first-generation undergraduate students. The primary hypothesis was that first-generation students would have significantly higher impostor feelings compared to non-first-generation students. In contrast to the hypothesis, the results indicated that the non-first-generation students had higher impostor scores than the first-generation students. In fact, the first-generation students experienced the impostor phenomenon at the “moderate” level, whereas the non-first-generation students experienced impostor feelings at the “frequent” level (Clance, 1985b).

Prior research on the impostor feelings of first-generation college students produced mixed results. Peteet et al. (2015) found higher impostor feelings in a sample of black and Hispanic first-generation students compared to non-first-generation students. A similar study found no correlation between first-generation status and impostor feelings in a sample of British

undergraduate students (Sonnak & Towell, 2001). The results of the current study are opposite of what has been found in these previous studies. Research indicates that first-generation students face many obstacles not faced by their non-first-generation peers such as higher attrition rates (Ishitani, 2006), higher likelihood of discrimination (Terenzini et al., 1996), poor confidence in their academic abilities (Hottinger & Rose, 2006), feeling less prepared for college, and an increased fear of failing college (Bui, 2002). This does not mean, however, that non-first-generation students do not have other experiences that may contribute to increased impostor feelings. One potential reason for these results is that non-first-generation students may feel pressure from highly educated family members. If this pressure is internalized, it may cause them to feel that they need to live up to the success achieved by their parents and family members, resulting in feelings that they are not actually intelligent. Future research is needed to further investigate this relationship between parental educational attainment and impostor feelings, as well as potential causes of that relationship.

Exploratory analyses revealed a negative correlation between age and impostor scores. This indicates that as age increases, impostor scores decrease. In first-generation students, this negative correlation between age and impostor scores still occurred. For non-first-generation students, however, there was no correlation between impostor scores and age. This finding of a negative correlation between age and impostor feelings is supported in the literature. Thompson et al. (1998) found a negative correlation between age and impostor scores. Therefore, the results of the current study provide strength for the results found in previous research. The fact that this correlation exists for first-generation students, but not for non-first-generation students could be due to first-generation students entering a position that is relatively new for them. Harvey (1981) found that the first-year graduate students had higher impostor feelings compared

to senior honors students, which indicates that impostor feelings do not decrease as a result of more education and that they could be influenced by starting a new and unfamiliar position. First-generation students are beginning an especially unfamiliar position because their parents were unable to prepare them for their new environment in college (Hottinger & Rose, 2006). As these students age, they begin to feel more comfortable in the college environment, which leads to less impostor feelings. Non-first-generation students may be more prepared for the college environment, which could cause them to not experience a decrease in impostor feelings over time.

Exploratory analyses also revealed that women had higher impostor scores compared to men. The finding that women had higher impostor scores compared to men contrasts with recent literature. Recent research has found that men and women do not have significantly different impostor scores, but it is worth noting that early impostor phenomenon research found that women experienced more intense impostor feelings than men (Bernard et al., 2002; McClain et al., 2016). The reason that the current study found that women had higher impostor scores compared to men could be partly because the majority of the sample was female.

### **Implications**

All students, regardless of first-generation status, reported either moderate or frequent levels of impostor feelings. These results indicate that colleges and universities should consider offering services to assist all students become acclimated to college life, regardless of first-generation status, and that these supports should continue throughout students' academic careers. One potential support is to discuss the impostor phenomenon with students and facilitate discussions among students about their impostor feelings. Additionally, colleges and universities should consider offering counseling specifically addressing impostor feelings. These simple

supports could help students manage their impostor feelings and realize that their peers may also be experiencing these feelings. Offering these supports would allow colleges and universities to further help their student body feel more confident in their abilities, accomplishments and intelligence.

### **Potential Limitations**

A potential limitation of this study is the lack of diversity in the sample. The majority of the sample was comprised of women. This could be limiting because women could have different academic experiences than men, especially in terms of feeling successful. Additionally, the majority of the sample was a non-racial/ethnic minority, which indicates a lack of diversity in terms of the participants' racial/ethnic identity. Again, minority students could have different impostor feelings and experiences compared to non-minority students, which was not represented in the sample. Another potential limitation is that the majority of participants were in their second semester of college. This lack of diversity in the number of semesters the participants had been in college could affect the diversity of impostor scores represented in the sample. This limitation could have made it more difficult to identify potential differences in impostor feelings based on semesters in college.

### **Future Directions**

Future research could replicate the current study with a more diverse sample. One way to do this would be to replicate the study at a more diverse university. Additionally, it would be interesting to conduct this study at several universities that have different demographics, such as a small private university, a large research university, and a historically black college, in order to investigate if the students at those universities have differences in impostor scores. Future research could also explore reasons why non-first-generation students have may have higher

impostor scores, as found in the current study, such as family pressure from previously highly educated family members. Additionally, considering Thompson et al. (1998) found a relationship between the impostor phenomenon and psychological factors, such as self-esteem, depression, and anxiety, future research could investigate whether any of these factors act as mediators of the impostor phenomenon for first-generation students compared to non-first-generation students.

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## Appendix A

### Clance IP Scale

For each question, please select the number that best indicates how true the statement is of you. It is best to give the first response that enters your mind rather than dwelling on each statement and thinking about it over and over.

1. I have often succeeded on a test or task even though I was afraid that I would not do well before I undertook the task.  
 1 (not at all true)      2 (rarely)      3 (sometimes)      4 (often)      5 (very true)
2. I can give the impression that I'm more competent than I really am.  
 1 (not at all true)      2 (rarely)      3 (sometimes)      4 (often)      5 (very true)
3. I avoid evaluations if possible and have a dread of others evaluating me.  
 1 (not at all true)      2 (rarely)      3 (sometimes)      4 (often)      5 (very true)
4. When people praise me for something I've accomplished, I'm afraid I won't be able to live up to their expectations of me in the future.  
 1 (not at all true)      2 (rarely)      3 (sometimes)      4 (often)      5 (very true)
5. I sometimes think I obtained my present position or gained my present success because I happened to be in the right place at the right time or knew the right people.  
 1 (not at all true)      2 (rarely)      3 (sometimes)      4 (often)      5 (very true)
6. I'm afraid people important to me may find out that I'm not as capable as they think I am.  
 1 (not at all true)      2 (rarely)      3 (sometimes)      4 (often)      5 (very true)
7. I tend to remember the incidents in which I have not done my best more than those times I have done my best.  
 1 (not at all true)      2 (rarely)      3 (sometimes)      4 (often)      5 (very true)
8. I rarely do a project or task as well as I'd like to do it.  
 1 (not at all true)      2 (rarely)      3 (sometimes)      4 (often)      5 (very true)

9. Sometimes I feel or believe that my success in my life or in my job has been the result of some kind of error.

1 (not at all true)      2 (rarely)      3 (sometimes)      4 (often)      5 (very true)

10. It's hard for me to accept compliments or praise about my intelligence or accomplishments.

1 (not at all true)      2 (rarely)      3 (sometimes)      4 (often)      5 (very true)

11. At times, I feel my success has been due to some kind of luck.

1 (not at all true)      2 (rarely)      3 (sometimes)      4 (often)      5 (very true)

12. I'm disappointed at times in my present accomplishments and think I should have accomplished much more.

1 (not at all true)      2 (rarely)      3 (sometimes)      4 (often)      5 (very true)

13. Sometimes I'm afraid others will discover how much knowledge or ability I really lack.

1 (not at all true)      2 (rarely)      3 (sometimes)      4 (often)      5 (very true)

14. I'm often afraid that I may fail at a new assignment or undertaking even though I generally do well at what I attempt.

1 (not at all true)      2 (rarely)      3 (sometimes)      4 (often)      5 (very true)

15. When I've succeeded at something and received recognition for my accomplishments, I have doubts that I can keep repeating that success.

1 (not at all true)      2 (rarely)      3 (sometimes)      4 (often)      5 (very true)

16. If I receive a great deal of praise and recognition for something I've accomplished, I tend to discount the importance of what I've done.

1 (not at all true)      2 (rarely)      3 (sometimes)      4 (often)      5 (very true)

17. I often compare my ability to those around me and think they may be more intelligent than I am.

1 (not at all true)      2 (rarely)      3 (sometimes)      4 (often)      5 (very true)

18. I often worry about not succeeding with a project or examination, even though others around me have considerable confidence that I will do well.

1 (not at all true)      2 (rarely)      3 (sometimes)      4 (often)      5 (very true)

19. If I'm going to receive a promotion or gain recognition of some kind, I hesitate to tell others until it is an accomplished fact.

1 (not at all true)      2 (rarely)      3 (sometimes)      4 (often)      5 (very true)

20. I feel bad and discouraged if I'm not "the best" or at least "very special" in situations that involve achievement.

1 (not at all true)      2 (rarely)      3 (sometimes)      4 (often)      5 (very true)

Demographics

1. What is your age?
  - a. [Participants will select their response from a drop-down menu with answer choices of 18 through 100.]
2. Gender (check all that apply)
  - a. Male
  - b. Female
  - c. Non-binary
  - d. Self-identify: \_\_\_\_\_
3. How many semesters have you been in college, including summer semesters, the current semester, and any semesters you completed at other colleges?
  - a. [Participants will select their response from a drop-down menu with answer choices of 1 through 20.]
4. Which of the following best describes you? (check all that apply)
  - a. Asian or Pacific Islander
  - b. Black or African American
  - c. Hispanic or Latino origin
  - d. Native American or American Indian
  - e. White or Caucasian
  - f. Other: \_\_\_\_\_
5. What is your current cumulative GPA on a 4.0 scale?
  - a. [Participants will select their GPA on a sliding scale from 0 to 4.0.]
6. Think of this ladder as representing where people stand in the U.S. At the top of the ladder are the people who are best off -- those who have the most money, the most education, and the most respected jobs. At the bottom are the people who are the worst off -- who have the least money, least education, and the least respected jobs or no job.

The higher up your family is on this ladder, the closer your family is to the people at the very top; the lower your family is, the closer your family is to the people at the very bottom. Select the number that best corresponds with where you believe your family stands on this ladder.

- a. [Participants will select their response on a ladder with answer choices 1 through 10 in ascending order.]
7. What is the highest level of education completed by either of your parents or official guardians?
- a. Some high school
  - b. High school diploma
  - c. Some college
  - d. Associates degree
  - e. Bachelor's degree
  - f. Master's degree
  - g. Doctoral or professional degree



Table 1

*Impostor Phenomenon Scores*

<u>Group</u>	<u>Mean</u>	<u>Standard Deviation</u>
Total Sample	64.33	14.26
First-Generation	59.65	14.47
Non-First-Generation	65.96	13.90

Table 2

*Socioeconomic Status*

<u>Group</u>	<u>Mean</u>	<u>Standard Deviation</u>
Total Sample	6.05	1.55
First-Generation	5.13	1.18
Non-First-Generation	6.37	1.54

Table 3

*Racial/Ethnic Minority Status*

<u>Group</u>	<u>Ethnic Minority Percent</u>	<u>Non-Ethnic Minority Percent</u>
Total Sample	14.0	86.0
First-Generation	3.2	96.8
Non-First-Generation	17.8	82.2



Office of Research Integrity  
 Institutional Review Board (IRB)  
 2000 University Avenue  
 Muncie, IN 47306-0155  
 Phone: 765-285-5070

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DATE: December 20, 2018

TO: Shelby Haggard

FROM: Ball State University IRB

RE: IRB protocol # 1356092-1

TITLE: Academic Experiences Survey

SUBMISSION TYPE: New Project

ACTION: APPROVED

DECISION DATE: December 20, 2018

REVIEW TYPE: **EXEMPT**

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The Institutional Review Board reviewed your protocol on December 20, 2018 and has determined the procedures you have proposed are appropriate for exemption under the federal regulations. As such, there will be no further review of your protocol, and you are cleared to proceed with the procedures outlined in your protocol. As an exempt study, there is no requirement for continuing review. Your protocol will remain on file with the IRB as a matter of record.

**Exempt Categories:**

	<b>Category 1:</b> Research conducted in established or commonly accepted educational settings, involving normal educational practices, such as (i) research on regular and special education instructional strategies, or (ii) research on the effectiveness of or the comparison among instructional techniques, curricula, or classroom management methods.
X	<b>Category 2:</b> Research involving the use of educational test (cognitive, diagnostic, aptitude, achievement), survey procedures, interview procedures or observation of public behavior
	<b>Category 3:</b> Research involving the use of educational test (cognitive, diagnostic, aptitude, achievement), survey procedures, interview procedures, or observation of public behavior that is not exempt under category 2, if: (i) the human subjects are elected or appointed officials or candidates for public office; or (ii) Federal statute(s) require(s) without exception that the confidentiality of the personally identifiable information will be maintained throughout the research and thereafter.
	<b>Category 4:</b> Research involving the collection of study of existing data, documents, records, pathological specimens, or diagnostic specimens, if these sources are publicly available or if the information is recorded by the investigator in such a manner that subjects cannot be identified, directly or through identifiers linked to the subjects.

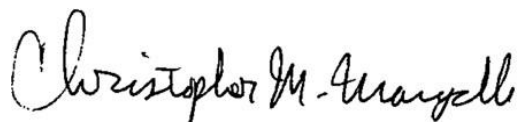
	<b>Category 5:</b> Research and demonstration projects which are conducted by or subject to the approval of Department or agency heads, and which are designed to study, evaluate or otherwise examine: (i) public benefit or service programs; (ii) procedures for obtaining benefits or services under those programs; (iii) possible changes in methods or levels of payment for benefits or services under these programs.
	<b>Category 6:</b> Taste and food quality evaluation and consumer acceptance studies, (i) if wholesome foods without additives are consumed or (ii) if a food is consumed which contains a food ingredient at or below the level and for a use found to be safe, by the Food and Drug Administration or approved by the Environmental Protection Agency or the Food Safety and Inspection Service of the U.S. Department of Agriculture.

While your project does not require continuing review, it is the responsibility of the P.I. (and, if applicable, faculty supervisor) to inform the IRB if the procedures presented in this protocol are to be modified or if problems related to human research participants arise in connection with this project. **Any procedural modifications must be evaluated by the IRB before being implemented, as some modifications may change the review status of this project.** Please contact (ORI Staff) if you are unsure whether your proposed modification requires review or have any questions. Proposed modifications should be addressed in writing and submitted electronically to the IRB (<http://www.bsu.edu/irb>) for review. Please reference the above IRB protocol number in any communication to the IRB regarding this project.

**Reminder:** Even though your study is exempt from the relevant federal regulations of the Common Rule (45 CFR 46, subpart A), you and your research team are not exempt from ethical research practices and should therefore employ all protections for your participants and their data which are appropriate to your project.



D. Clark Dickin, PhD/Chair  
Institutional Review Board



Christopher Mangelli, JD, MS, MEd, CIP/  
Director  
Office of Research Integrity